WHAT IS CLAIMED IS:

1. A building monitoring system utilizing bi-directional radio frequency communication comprising:

at least one master unit including a radio frequency transmitter and receiver; and

a plurality of remote units having a radio frequency transmitter and receiver, said remote units capable of transmitting to and receiving from said master unit.

2. A building monitoring system according to claim 1, wherein at least some of said remote units include sensors logically coupled to said remote units.

3. A building monitoring system according to claim 1, wherein said remote units having a first low power consumption state in which said remote units can neither receive nor transmit, a second power consumption state in which said units can receive, and a third power consumption state in which said units can transmit, wherein said second and third sates have higher power consumption than said first state.

4. A building monitoring system according to claim 3, wherein said remote units are in said receive state only at predetermined intervals.

5. A building monitoring system as recited in claim 4, wherein in normal operation said remote units are in said receive state only after being in said transmit state.

6. A building monitoring system as recited in claim 5, wherein said remote

units are in said receive state and await an acknowledgment from said master unit only after being in said transmit state.

7. A building monitoring system as recited in claim 4, wherein said remote units transmit messages at periodic intervals.

8. A building monitoring system as recited in claim 4, wherein said remote units transmit messages after a predetermined event for a discrete period of time and then await an acknowledgment of said message transmission.

9. A building monitoring system as recited in claim 8, wherein after said remote units receive said acknowledgment, said remote units do not further transmit said transmitted message.

10. A building monitoring system as recited in claim 2, wherein said remote units have an armed state in which said sensors are active and able to measure sensor variables, and a disarmed state in which said remote units are unable to transmit messages, wherein said remote units have means for switching between said armed and disarmed states, and wherein said means for switching between the armed and disarmed states is responsive to a message received from said master unit.

11. A building monitoring system as recited in claim 10, wherein said remote units are unable to measure at least some sensor variables while in said disarmed state.

12. A building monitoring system as recited in claim 10, wherein said remote unit includes a controller logically coupled to said receiver, wherein said means for switching between said armed and disarmed states passes said message from said receiver to said controller, processes said message in said controller; executes arm instructions in response to an arm message; and executes disarm instructions in response to a disarm message, wherein said disarm instructions prevent said sensor change messages from being transmitted.

13. A building monitoring system as recited in claim 2, wherein said remote units have a reading sensor state in which said sensors are read by said coupled remote units, wherein said reading sensor state is entered in response to a read message received from said master unit; and

said system including means for validating a sensor event, said means for validating including means for requesting reading of said sensor initiated by said master unit and means for reading said sensor by said remote unit responsive to said means for requesting, wherein said means for validating includes means for transmitting sensor data from said remote unit to said master unit.

14. A building monitoring system as recited in claim 13, wherein said sensors have a type and, said means for validating sensor data includes at least two different validation processes, wherein said means for validating include means for identifying a sensor type and means responsive to said type for determining which of said validation processes to use.

15. A building monitoring system as recited in claim 14, wherein said validation processes waits a predetermined time before requesting an additional sensor reading and said predetermined time to wait is a function of said remote sensor type.

16. A building monitoring system as recited in claim 14, wherein said means for validating includes an indication of whether to request an additional sensor reading and said indication of whether to request said additional reading is a function of said remote sensor type.

17. A building monitoring system utilizing bi-directional radio frequency communication comprising:

at least one master unit including a radio frequency transmitter and receiver;

a plurality of remote units each having a radio frequency transmitter and receiver, said remote units capable of transmitting to and receiving from said master unit and capable of generating polling events in response to a poll message received from said master unit;

said remote units each having at least one timer for generating a timeout event;

said remote units each having at least one sensor for measuring selected variables;

said remote units capable of generating a sensor event in response to a sensor change of measurement; and

said remote units each having a non-communicating state with low power consumption and in which said remote units can neither receive nor transmit, and a receiving state having higher power consumption than said non-communicating state and

in which said units can receive, wherein said selected remote units are in said receiving state only after selected event occurrences, wherein said selected events are selected from the group consisting of timeout events, polling events, and sensor events.

18. A building monitoring system as recited in claim 17, wherein said remote units each have a transmitting state in which said remote unit can transmit and in which power consumption is higher than in said non-communicating state, wherein said polling event causes said remote unit to enter said transmitting state followed by entering said receiving state.

19. A building monitoring system as recited in claim 17, wherein said remote units each have a transmitting state in which said remote unit can transmit and in which power consumption is higher than in said non-communicating state, wherein said sensor event causes said remote unit to enter said transmitting state followed by entering said receiving state.

20. A building monitoring system as recited in claim 19, wherein said sensor event is caused by a change in a measured variable.

21. A building monitoring system as recited in claim 20, wherein said sensor variable is a binary variable.

22. A building monitoring system as recited in claim 20, wherein said sensor

variable is a continuous variable.

23. A method for communicating between a remote unit and a master unit in a radio-frequency building monitoring system, comprising:

transmitting a message from the remote unit to the master unit; and

transmitting an acknowledge from the master unit to the remote unit indicating receipt of the message.

24. A method according to claim 23, further comprising the steps of:

transmitting a message from the master unit to the remote unit; and

transmitting an acknowledge from the remote unit to the master unit indicating receipt of the message.

25. A method for communicating between a remote unit and a master unit in a radio-frequency building monitoring system, wherein the remote unit is capable of transmitting to and receiving messages from the master unit, the remote unit further having a non-communicating low power consumption state in which said remote unit can neither receive nor transmit, a receiving state in which said remote unit can receive, and a transmitting state in which said remote unit can transmit, said remote unit also having at least one sensor for producing a sensor change event, the method comprising:

waiting for the sensor change event while in said non-communicating state;

entering the transmitting state and transmitting a message upon detecting the sensor change event;

entering the receiving state and waiting for acknowledgment of said data transmission; and

returning to the waiting for sensor change step.

26. A method as recited in claim 25, wherein said remote unit does not transmit while in said receiving state and does not receive while in said transmitting state.

27. A method as recited in claim 25, wherein said remote unit receives scheduling information from said master unit while in at least some of said receiving states.

28. A method as recited in claim 25, wherein said remote unit receives transmission frequency instructions from said master while in at least some of said receiving states.

29. A method as recited in claim 25, wherein said system includes a validating step, when said validating step includes: receiving a request for a sensor re-read from said master unit, wherein said sensor re-read request is responded to by said remote unit by reading said sensor and transmitting a message to said master unit.

30. A method as recited in claim 25, further including:

changing to a disarmed state upon reception of a disarm message from said master unit, wherein, while in said disarmed state, said remote unit does not, in combination,

both sense sensor data from the sensor and transmit sensor data; and

changing to an armed state upon reception of an arm message from said master unit, wherein, while in said armed state, said remote unit does, in combination, sense sensor data from the sensor and transmit sensor data.

31. A method for communicating between a remote unit and a master unit in a radio-frequency building monitoring system, wherein the remote unit is capable of transmitting to and receiving messages from the master unit, the remote unit further having a non-communicating low power consumption state in which said remote unit can neither receive nor transmit, a receiving state in which said remote unit can receive, and a transmitting state in which said remote unit can transmit, the method comprising:

determining a time for communicating with said master;

waiting for said time while in said non-communicating state;

changing to said transmitting state and transmitting a message upon attaining said determined time for communication;

waiting for acknowledgment of said transmission in said receiving state; and

returning to said determining step for determining a new time for communicating with said master.

32. A method according to claim 31, wherein the remote unit has at least one sensor for producing sensor output data, at least some of the messages transmitted upon attaining said time for communication including said sensor output data.

33. A method for communicating between a remote unit and a master unit in a radio-frequency building monitoring system, wherein the remote unit is capable of transmitting to and receiving messages from the master unit, the remote unit further having a non-communicating low power consumption state in which said remote unit can neither receive nor transmit, a receiving state in which said remote unit can receive, and a transmitting state in which said remote unit can transmit, the method comprising:

providing a time signal from said master to said remote;

waiting while in said non-communicating state for a time interval corresponding to said provided time signal; and

changing to said transmitting state and transmitting a message after expiration of said time interval.

34. A method according to claim 32, further comprising:

waiting for acknowledgment of said transmission in said receiving state; and

waiting while in said non-communicating state.